

GIN STORAGE
Engineering



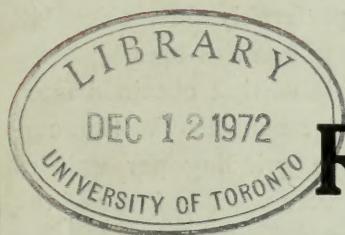
Allis-Chalmers

Manufacturing Company

Bulletin No. 1821

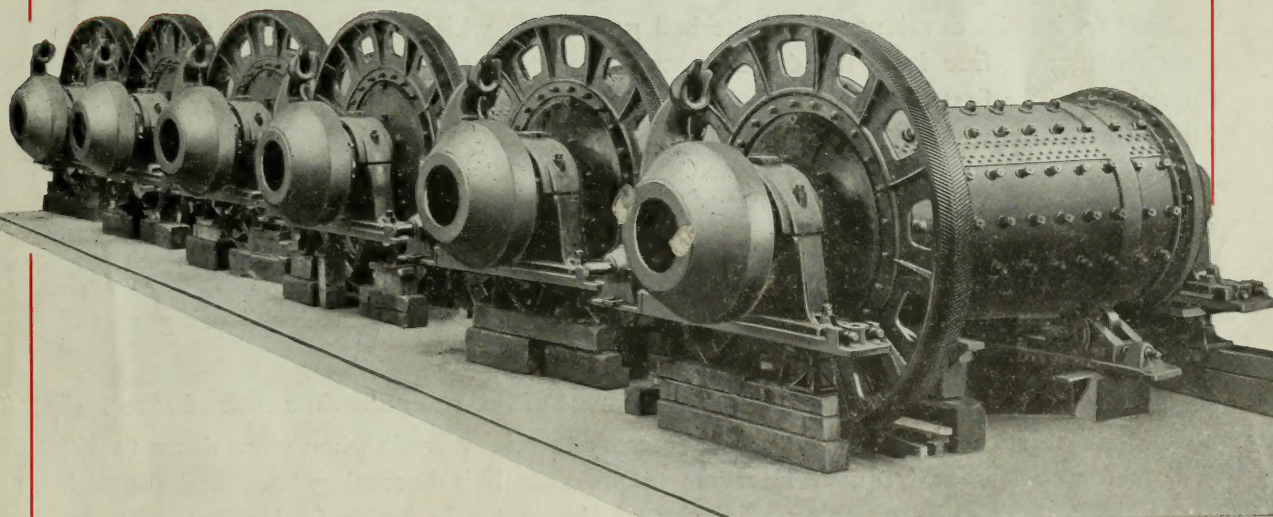
Mining Machinery Department

August, 1922



ROD MILL

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Department of Mining Engineering



Order of Rod Mills Assembled and Ready for Shipment

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Milwaukee, Wisconsin, U. S. A.

By Allis-Chalmers Manufacturing Co.

Allis-Chalmers Rod Mills

THE Rod Mill, although a comparatively new development in grinding mills has received considerable attention from engineers and operators in recent years.

Its efficiency together with the low grinding costs shown with its use have demonstrated the modern rod mill to be an important step in advance in grinding equipment. It has been found particularly applicable where a uniform product containing a minimum of oversize and undersize is advantageous in connection with concentration of low grade ore. Actual experience has shown that the best results are obtained from rod mills working on feed finer than 1" and preferably finer than $\frac{3}{4}$ " making a product from 20 to 80 mesh in one pass. In the treatment of ores by some processes the product of the rod mill is found to be preferable to that obtained from the ball mill. We say this without prejudice, as we build both machines. Within certain limits the rod mill has been found capable of doing more grinding per unit of power with less consumption of steel than the ball mill. Another point in favor of the rod mill is the low price of steel rods as compared with forged steel balls. The consumption of steel per ton of ore ground is no greater in a rod mill than in a ball mill.

In designing a rod mill we had the benefit of the broad experience gained in connection with the development of the ball granulator which enabled us to place a mill on the market free from the defects usually incident to the development of a new machine. The first rod mills built by us have been in continuous service over two years and to our knowledge have required no repairs.

We have developed two distinct types of rod mills, one for wet grinding and the other for dry grinding.

The wet grinding mill is supported by trunnions at both ends while the dry grinding mill is supported by a trunnion at the feed end and a two roller bearing at the discharge end.

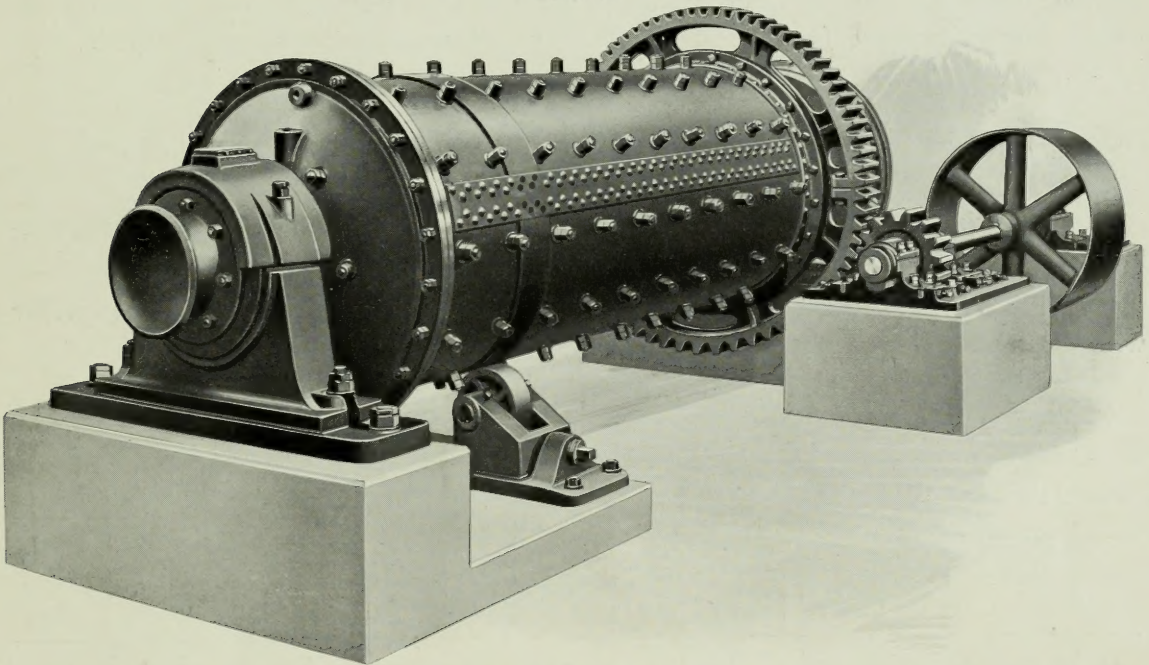
During the early stages in the development of the rod mill when rods of 1" to $1\frac{1}{2}$ " diameter were used, it was thought necessary to remove rods when worn down to $\frac{1}{2}$ " diameter or less at frequent intervals to prevent their becoming bent and tangled, thereby reducing the crushing efficiency of the mill. In order to facilitate the removal of these worn rods, mills with large openings in the heads and supported by tires and rollers were adopted.

ROD MILLS

Rod Mill
Grinders

Upon experimenting with rods up to 3" and 4" diameter, of high-carbon steel, it was found that the worn rods did not bend and become tangled, but that they were broken into short pieces and discharged with the pulp thereby making it unnecessary to open the mill at frequent intervals to remove them. It also was found that by the use of heavier rods the crushing capacity of the mill was greatly increased. The trunnion supported type mill was then adopted by us for wet grinding on account of its simplicity and lower first cost, as well as the advantage of being able to operate this type of mill with a lower moisture content in the pulp, thereby reducing the wear on liners and rods with consequent lower operating costs

Cut 15775



Allis-Chalmers 4' x 10' Wet Grinding Rod Mill.

ALLIS-CHALMERS WET GRINDING ROD MILL.

WET GRINDING MILL, trunnion supported.

The outstanding features of this mill are, (1) both ends supported in trunnion bearings of generous proportions insuring low bearing pressure, (2) extra large opening in the feed end trunnion to facilitate feeding the large tonnage reduced in a rod mill, (3) opening in the discharge trunnion sufficiently large to permit a man entering the mill to inspect the interior making a manhole in the shell unnecessary; also giving a hydraulic gradient sufficient to induce a rapid flow of pulp through the mill but not enough to cause uneven wear of the rods.

The construction of the discharge trunnion bearing is such that the discharge head can be removed to replace the lining in the shell without dismantling the bearing.

A pair of rollers mounted on a soleplate are provided to support the discharge end of the shell when the head is removed. The shell can be rotated when supported on these rollers so as to give access to all parts of the interior without removing the rods. The rollers are backed off with screws when not supporting the shell.

Details of Construction

Allis-Chalmers Rod Mills are built in standard sizes to meet varying requirements as to capacity and particular service.

In the following table we give a list of the sizes we aim to carry in stock together with a complete line of repair parts.

Size of Mill		Weight of Average Rod Charge Lbs.	Approximate Capacity in Tons per 24 Hrs. Material Medium Hard Quartz.		H. P. to Run.	H. P. of Motor Recommended	R.P.M. of Mill	Speed of Counter-Shaft		Size of Pulley	Approximate Weights Complete	
Dia.	Length		1" to 20 mesh	½" to 60 mesh				Spur Gear Drive	Wuest Gear Drive		Pulley and Spur Gear Drive without Rod Charge	Wuest Gear Drive without Motor or Rod Charge
3'	6'	4900	95	45	15	20	34	176	...	40"x12"	22500	
3'	8'	6500	125	60	20	25	34	176	...	40"x12"	24500	
4'	8'	12000	240	110	36	40	26	140	490	64"x12"	39000	38500
4'	10'	15000	300	140	45	50	26	140	490	64"x12"	43000	42500
5'	10'	26500	500	225	80	100	20	122	390	84"x19"	57500	55500
6'	12'	47500	800	350	135	150	18	110	350	84"x25"	81500	79500

ROD MILLS

DRIVES:

For trunnion supported, wet grinding mills either spur gear and pulley, or herringbone gear with direct connected motor drives can be furnished.

Spur gear, pulley driven, mills can be furnished from stock with either plain or friction clutch pulley, right or left-hand drive, with gear on feed end only.

Motor driven mills can be furnished from stock with wound rotor motors, 440 or 220 volts, 60 cycle, 3 phase and are left-hand drive only with gear on feed end.

Spur gear chain driven mills are furnished only on order.

When quick shipment is not important any modification of standard drives can be furnished.

Our mills are designated right or left-hand drive when facing the gear end.

SPUR GEAR DRIVES:

Our spur gear drives are offered in three combinations as follows:

- a. Gear cast iron with accurately machine moulded teeth. Pinion cast steel with cut teeth.
- b. Gear cast iron. Pinion cast steel, both with machine cut teeth.
- c. Gear cast steel. Pinion cast steel, both with machine cut teeth.

All gears are bored concentric with the axis of the mill. The web is machined on both sides and drilled to template so that when the teeth are worn on one side the gear can be reversed and a like amount of wear obtained on the other side.

All pinions are properly bored, keyseated and fitted to countershaft.

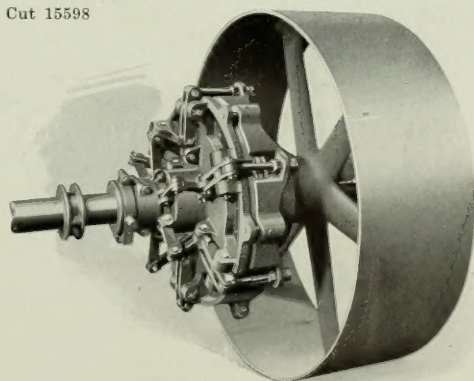
COUNTERSHAFT:

The countershaft is of turned mild steel properly keyseated for the pinion and driving pulley and provided with two safety set collars mounted in three high grade chain oiling bearings, each provided with a heavy cast iron sole plate. The sole plates are accurately planed on the top surface and provided with set-screw adjustment for the end of the bearing. Foundation bolts for mounting the sole plates on concrete foundation are supplied.

Cut 15598

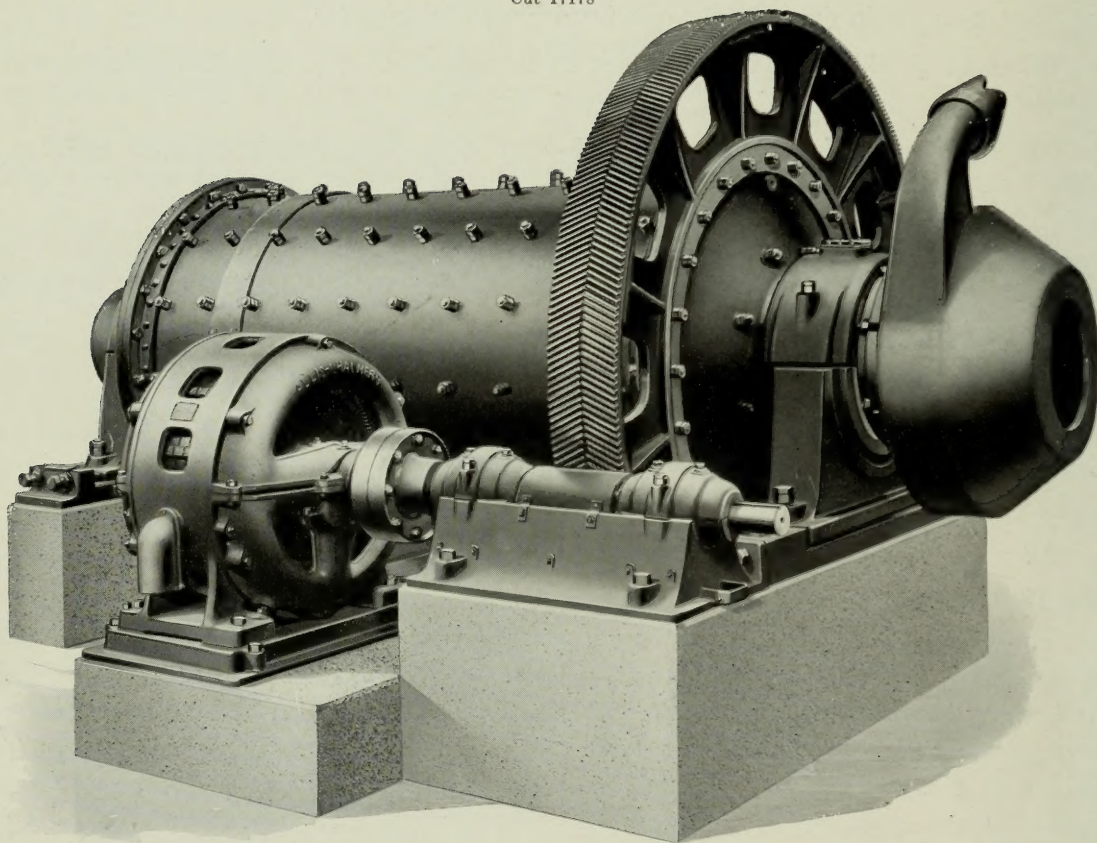
There is also provided a heavy cast iron driving pulley of suitable size, properly turned and balanced, bored and keyseated, and fitted to the countershaft and when required, equipped with a type "C" Allis-Chalmers 6-arm clutch with asbestos faced, block lining.

The friction clutch pulley sizes can be altered within certain limits.



Type "C" Friction Clutch Pulley

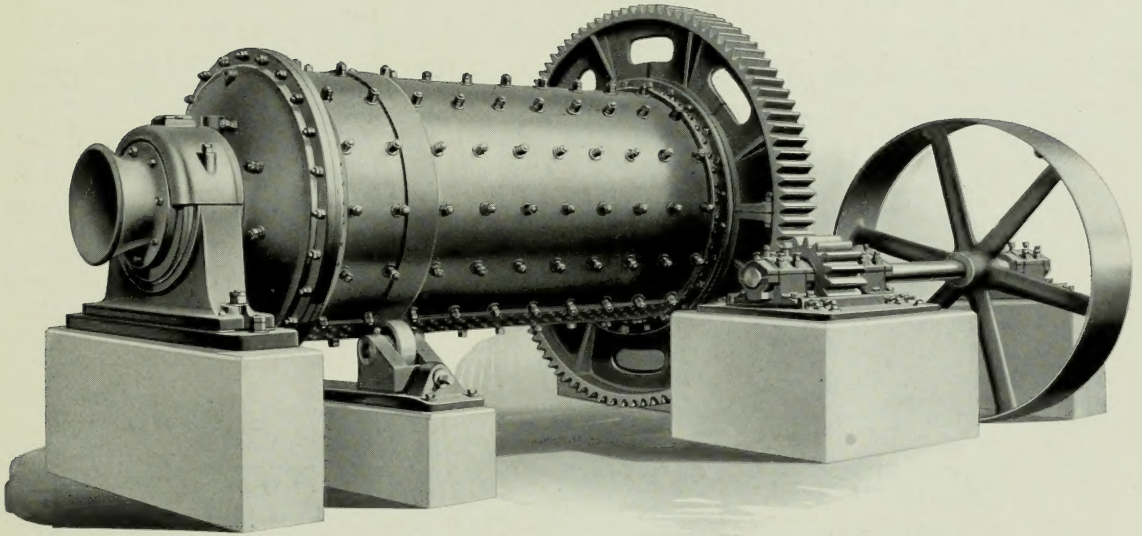
Cut 17178



Allis-Chalmers Wet Grinding Rod Mill Driven Through Single Reduction of Gears by an Allis-Chalmers Motor.

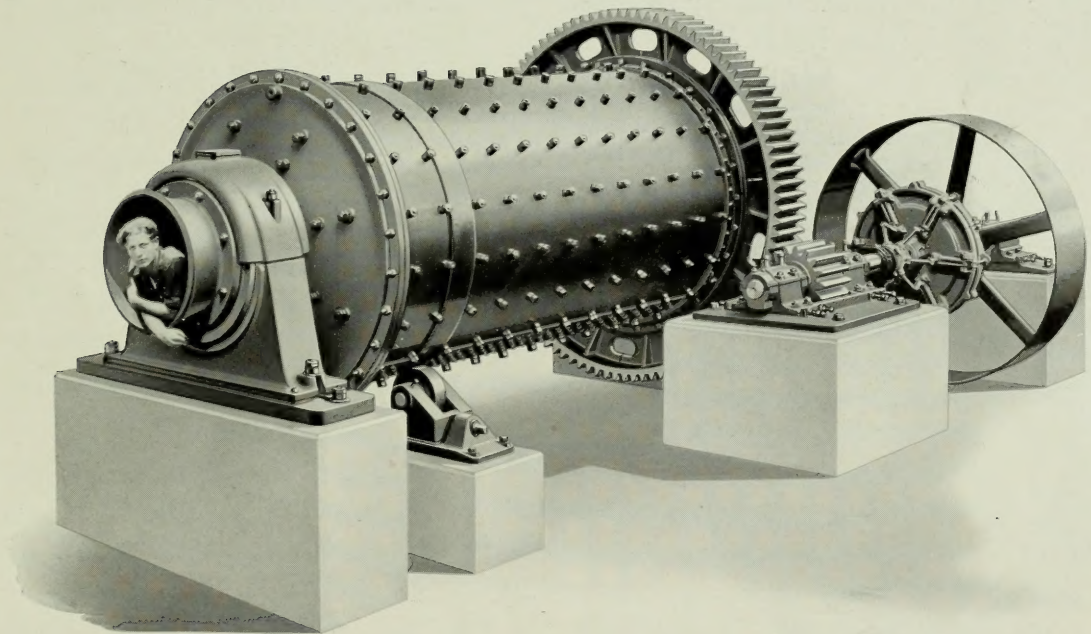
ROD MILLS

Cut 17589



5' x 10' Rod Mill With Spur Gear and Plain Pulley Drive

Cut 17642



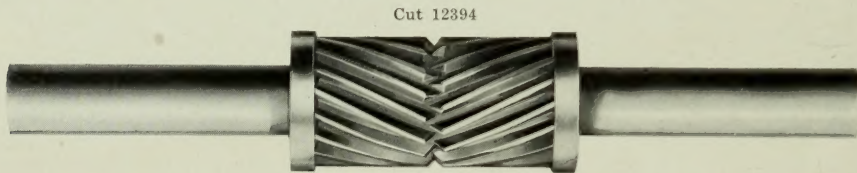
6' x 12' Rod Mill With Spur Gear and Friction Clutch Pulley Drive

ALLIS-CHALMERS MANUFACTURING COMPANY

WUEST GEAR DRIVE (for trunnion supported, wet grinding mills only)

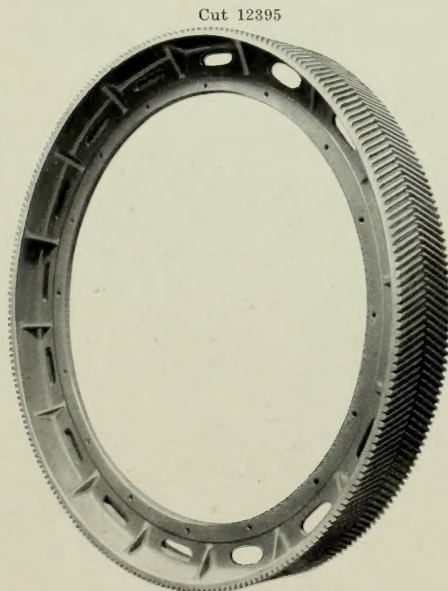
GEAR: The main driving gear is of the Wuest double helical type made of cast steel with teeth accurately machine-cut. It is properly machined, drilled to template and bored concentric with the axis of the mill. It is also provided with necessary bolts for attaching to the head.

PINION: The pinion is of the Wuest double helical type with teeth accurately machine cut to match the gear. The pinion has two external shrouds made of rings turned with a slight inward taper and shrunk on the pinion ends. This gives a construction which will stand the severest operating conditions.



Wuest Pinion

PINION SHAFT: The pinion shaft is made of forged steel and is forged integral with the pinion. It is properly keyseated on both ends for a flexible coupling and the length is such that either end may be used. This is done so that the pinion and gear may be reversed when the faces of the teeth on one side become worn.



Wuest Gear

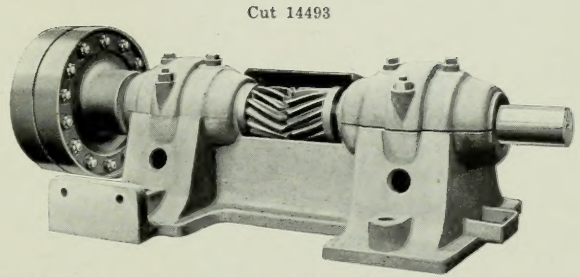
COUNTERSHAFT BEARINGS:

The shaft is run in two special high speed bearings of the ring oiling type designed for this service. These bearings have removable bab-bitted shells with ball and socket seats. The lower half of these bearings is cast integral with the base plate. This base plate is arranged to be bolted to the sole plate supporting the main trunnion bearing.

With the Wuest gear drive, the main trunnion bearings are mounted on adjustable sole plates. Alignment is secured by aligning the mill axis to the countershaft axis. This does not disturb the alignment of the motor and pinion shaft. This construction is of the latest design and the best Wuest gear drive on the market.

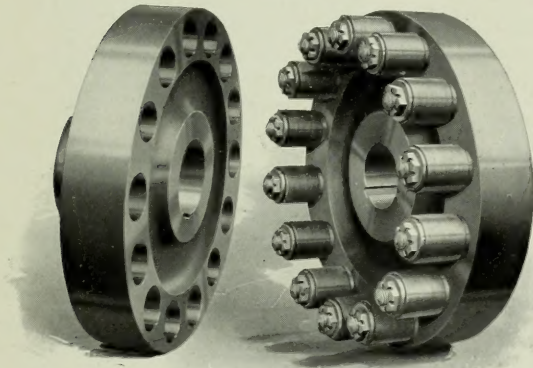
FLEXIBLE COUPLING:

A high grade flexible coupling, designed especially for electric drive is shown in the accompanying illustration. This coupling, which from its construction is designated as the bushing type, consists essentially of two disc castings. Projecting from the face of and rigidly



Countershaft Assembled

Cut 12402



Bushing Type Flexible Coupling
split showing construction.

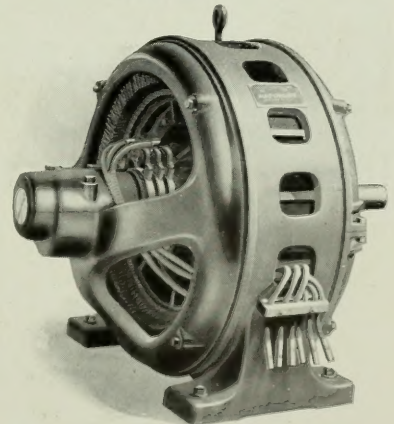
attached to one of these discs are a number of pins upon which are assembled leather washers or bushings.

The bushings project into, and are finished to fit corresponding openings in the opposite disc. These bushings reduce the jar or shock incidental to starting, and thus protect the motor. This coupling freely permits the slight end play or lateral oscillation desirable for electrical drive.

MOTORS:

Motors of the slip ring type are furnished for direct connection to Rod Mills. They have a pullout torque, not less than 200% of normal load torque with approximately 200% of normal current. This heavy duty capacity combines with large air gap and liberally proportioned dust proof bearings to make the motor operate for long periods with little or no repairs. The housing on the coupling end is split to make all bearing parts accessible without removing the coupling from the shaft.

Cut 12396



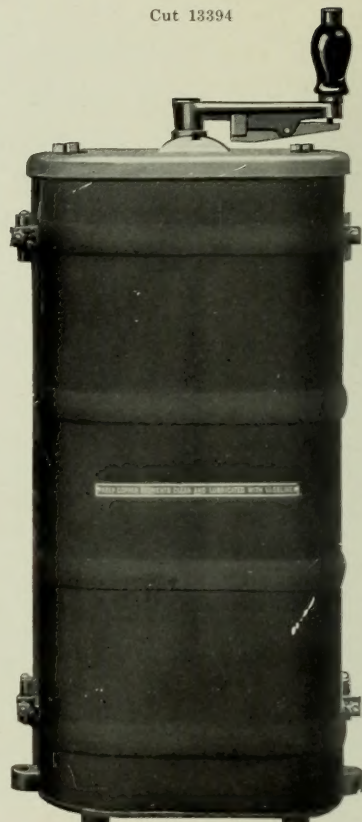
Rod Mill Motor

Cut 13394

Starting Equipment

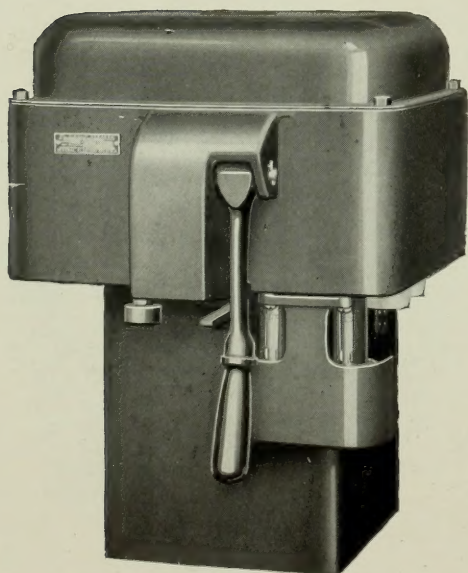
Starters for the above motors are designed so that the motor will deliver 150% full load torque on the first point. This usually is sufficient to start the machine, but provision is made in proportioning the grids for 200% full load torque on the second point, so that a large factor of safety is obtained over operating requirements.

Starters are of the drum type and handle both the primary and secondary circuit of the motor. The drum structure is totally enclosed, having renewable contacts with the fingers and fingerboard easily accessible. Separate resistors are provided so that the resistor banks can be located in any convenient place near the drum.



Drum Type Starter

Cut 14117



Oil Circuit Breaker

OIL CIRCUIT BREAKER:

Oil circuit breakers are not regularly included with the starting equipment but can be furnished usually from stock. These breakers are of the wall mounting type, as shown in the cut, and have overload and no-voltage release. They can also be equipped with an ammeter mounted on the cover, and supplied with a pipe frame support, if prompt shipment is not required. Panel mounted starters can also be furnished.

A desirable feature of this circuit breaker is the electrical interlock between the oil switch and the resistance starter whereby it is impossible to close the primary oil switch unless the resistance starter is on the first notch, that is, has full resistance in the secondary circuit of the motor, thus protecting the motor against a very suddenly applied load.

SHELL:

The shell is made of heavy steel plate with double riveted longitudinal butt strapped joints and cast steel double riveted flanges on ends. After riveting these flanges to the shell they are machined true and parallel with each other to insure proper alignment of trunnions.

The shell for the dry crushing open end mill is constructed the same in every particular as the shell for the wet crushing trunnion supported mill with exception that a re-enforcing plate is riveted on near the discharge end on which is mounted a cast steel base ring fitted with a removable high carbon steel tire.

HEADS:

The heads are cast of semi-steel of such proportions and design as to amply take care of all bending and shearing stresses.

The flanges on heads and shell are machined with male and female joints to insure accurate alignment and to carry the shearing effect of the load. The heads are bolted to the flanges with finished through bolts; on the gear end sufficient stud bolts are provided to permit of removing the gear without removing the head. The trunnions are cast integral with the heads and finished true with the axis of the mill.

BEARINGS:

The trunnion supported mill is provided with two heavy cast iron spherical bearings of ample size to insure low bearing pressure.

The shell rests in the saddle conformably and is interchangeable; both shell and saddle being machined accurately to gauge.

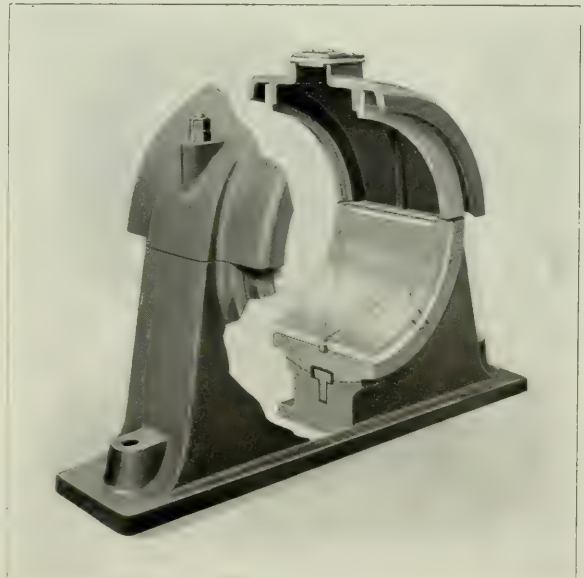
The shell is provided with removable babbitt liner.

A dowel pin in the lower part of the saddle engages with a corresponding recess cast in the bottom of the shell preventing its turning in the saddle.

The cap or upper half of the bearing has a large space for wool-waste and lubricant. It is provided with shrouds which extend out over the oil and dirt flanges of the trunnions and down to the center line of the bearing to prevent entrance of grit and water into the bearing.

An opening in the cap large enough to admit the hand is provided. It is closed by iron-weighted canvas cover of hinged construction designed to prevent dirt and water from entering the oil space.

Cut 16770



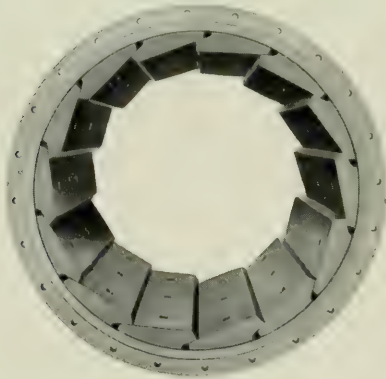
Trunnion Bearing

LINERS:

The feed and discharge end trunnions are provided with cast iron removable liners.

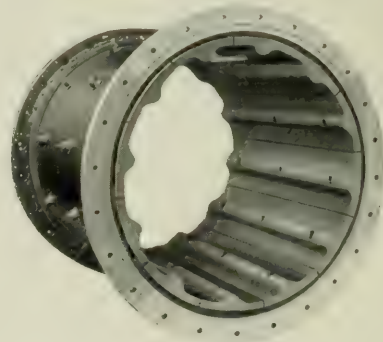
The shell liners can be furnished of either hard iron, chrome or manganese steel of our ship lap or wave types. These liners are made extra thick and designed so the wear will be uniform over the entire section, the ultimate result being an exceptionally long life and a minimum of scrap when the worn liner is removed. The shell is drilled to match bolt holes cast in the liners. The necessary bolts are furnished.

Cut 13603



Ship Lap Type Liner

Cut 13600



Wave Type Shell Liner

The feed and discharge heads can be furnished with removable liners of either hard iron, chrome or manganese steel, drilled to match and provided with the necessary bolts.

DISCHARGE CONE:

For discharging the product of the mill, the discharge end trunnion liner is cast integral with a flanged discharge cone.

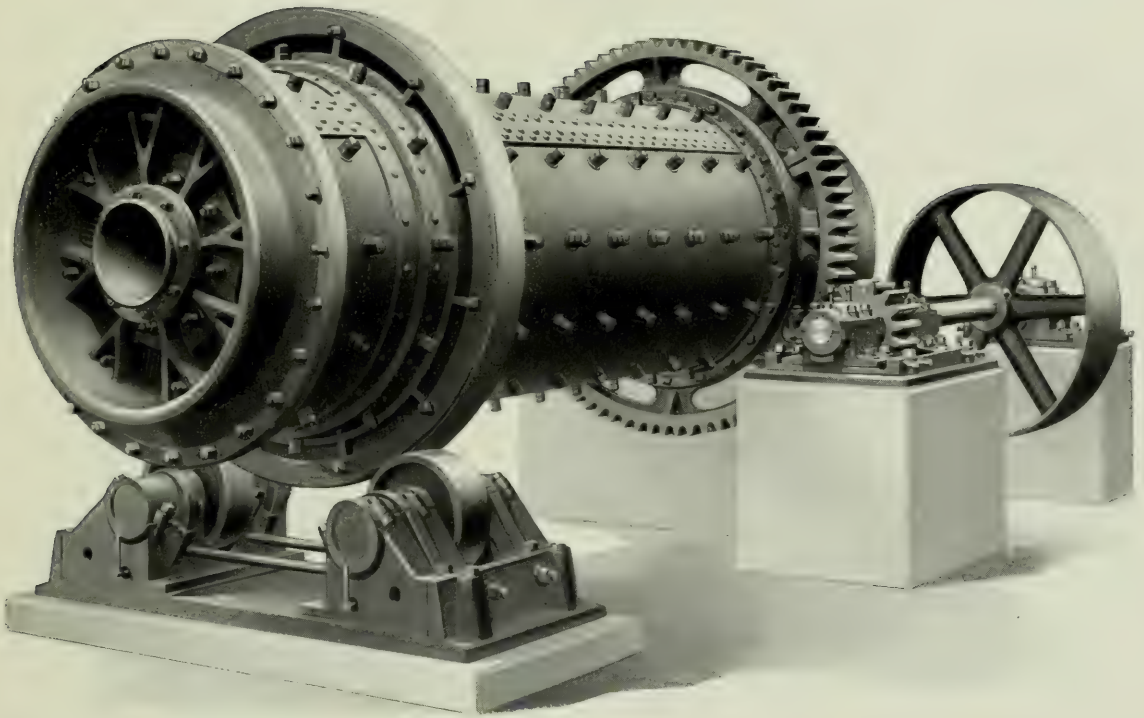
Cut 17511



Discharge Spout and Trunnion Liner

ROD MILLS

Cut 17140



Allis-Chalmers Dry Grinding Rod Mill

DRY GRINDING MILL, Roller Supported.

For dry grinding the open end discharge, roller supported mill, is best adapted, for the reason that with a free discharge of the ground material, increased capacity and greater uniformity of the product is obtained. In the construction of the discharge head the principle of the grate diaphragm so successfully used in our ball granulator has been adopted. This gives a large screen area and a peripheral discharge.

In the table on Page 14 we give a list of the sizes of dry grinding rod mills we aim to carry in stock.

ALLIS-CHALMERS MANUFACTURING COMPANY

Size of Mill		Weight Average Rod Charge Lbs.	Approx. Capacity Tons per 24 Hrs. Material Medium Hard Quartz.		H. P. to Run	H. P. of Motor Recom- mended	R. P. M. of Mill	Speed of Counter- shaft Pulley Drive	Size of Pulley.	Approx. Weight Complete Pulley and Spur Gear Drive without Rod Charge.
Dia.	Length		1" to 20 mesh.	½" to 60 mesh.						
4'	8'	12000	140	60	45	50	26	140	64"x12"	49000
4'	10'	15000	175	75	55	55	26	140	64"x12"	53000
5'	10'	26500	300	130	100	125	20	122	84"x19"	70000
6'	12'	47500	550	250	160	200	18	110	84"x25"	95000

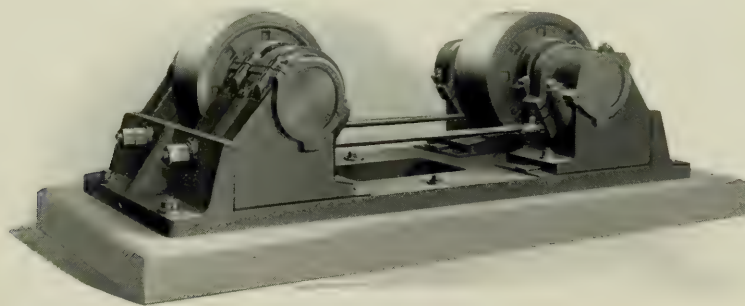
ROLLER BEARING:

The dry grinding, open end, mill is supported at the feed end in a trunnion in same manner as the wet grinding mill. The discharge end is supported on two rollers mounted in angle boxes on a heavy cast iron sole-plate.

The rollers are of large diameter with ample width of face to support the load. The hubs are made of semi-steel fitted with high carbon steel tires and extra heavy steel axles. The double adjustable angle boxes are of the ring oiling type cast in one piece and fitted with removable babbitted bearing shells. The bottom surface of the angle boxes is finished with two grooves.

The sole-plate is of cast iron machined on the upper surface and finished with two splines or tongues which engage with the grooves in the bottom of the angle box to maintain them in alignment with one another. Transverse ribs are cast on the ends of the sole-plate to which shims are fitted to adjust the bearings.

Cut 17334



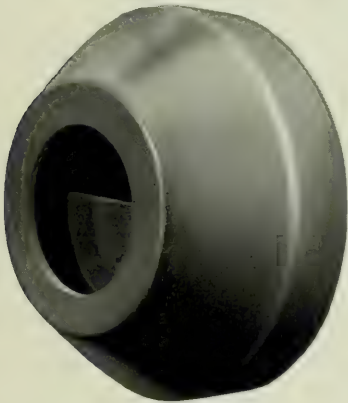
Double Roller Bearing.

DISCHARGE HEAD:

The discharge head is made of semi-steel cast with multiple grate-openings and a single central combination overflow and manhole opening. The inner face of the head is machined to fit the flange on the shell and to provide a finished seat for the grates. A wide circular discharge lip is cast integral with the head and finished on the outer surface which permits of a housing being fitted to same. An exhaust fan can be connected to the housing to draw the dust out of the mill and blow it into dust collectors to keep the building clear of dust.

For details of construction of feed head, shell, feed trunnion and drives see details of construction of wet grinding rod mills.

Cut 16969



Drum Feeder.

handle coarse feed wet or dry without clogging, and will feed mechanical classifier return when the mill is operated in closed circuit. The primary feed is spouted directly into the drum through the center opening; it is then elevated and delivered to the mill by an interior spiral. An exterior scoop elevates the mechanical classifier return and delivers it to the interior spiral.

The drum feeder is an exact duplicate of the combination feeder without an external scoop and is preferred where it is not necessary to elevate classifier return.

FOUNDATION BOLTS:

A complete set of foundation bolts is supplied.

FEEDERS:

The following types and sizes of rod mill feeders are carried in stock:

No. 1 Combination Feeder	36" radius
No. 2 Combination Feeder	46" radius
No. 1 Drum Feeder	40" diameter
No. 2 Drum Feeder	48" diameter

Our combination feeders are designed for the large tonnages fed in rod mill practice. They can

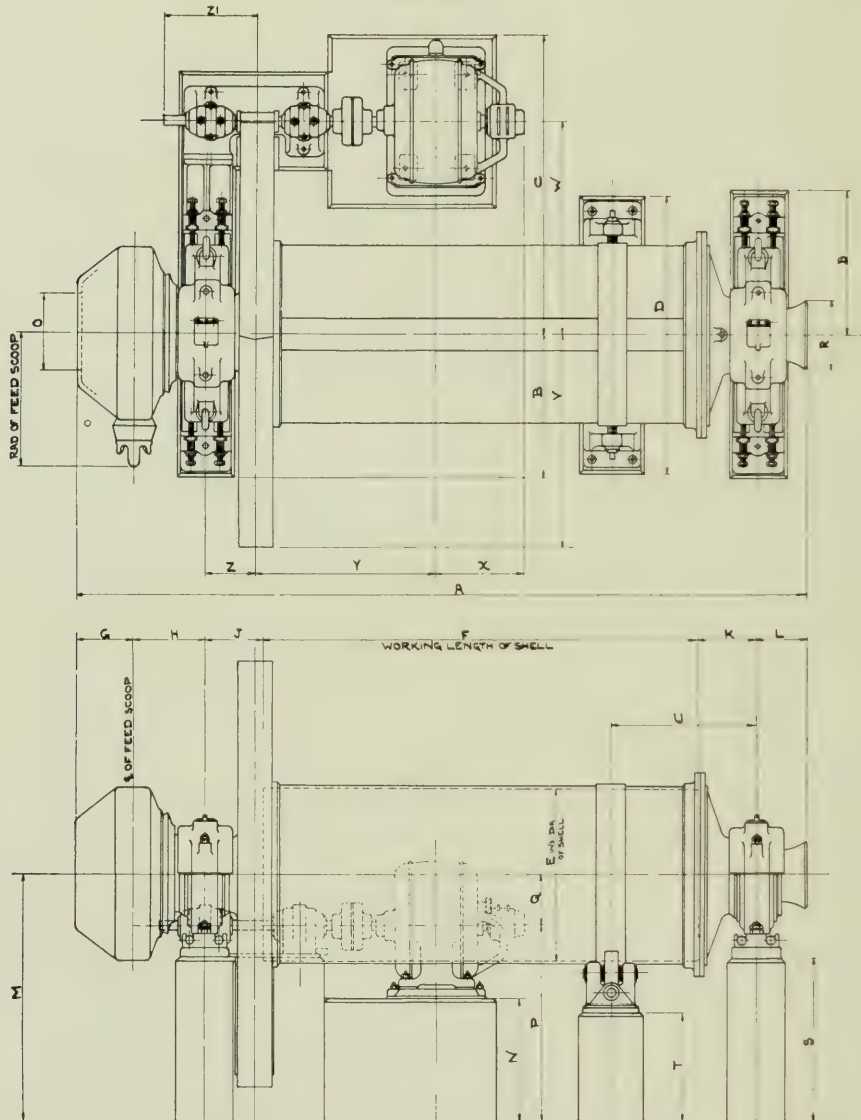
Cut 16969



Combination Feeder 36" Radius.

ALLIS-CHALMERS MANUFACTURING COMPANY

Cut 17480



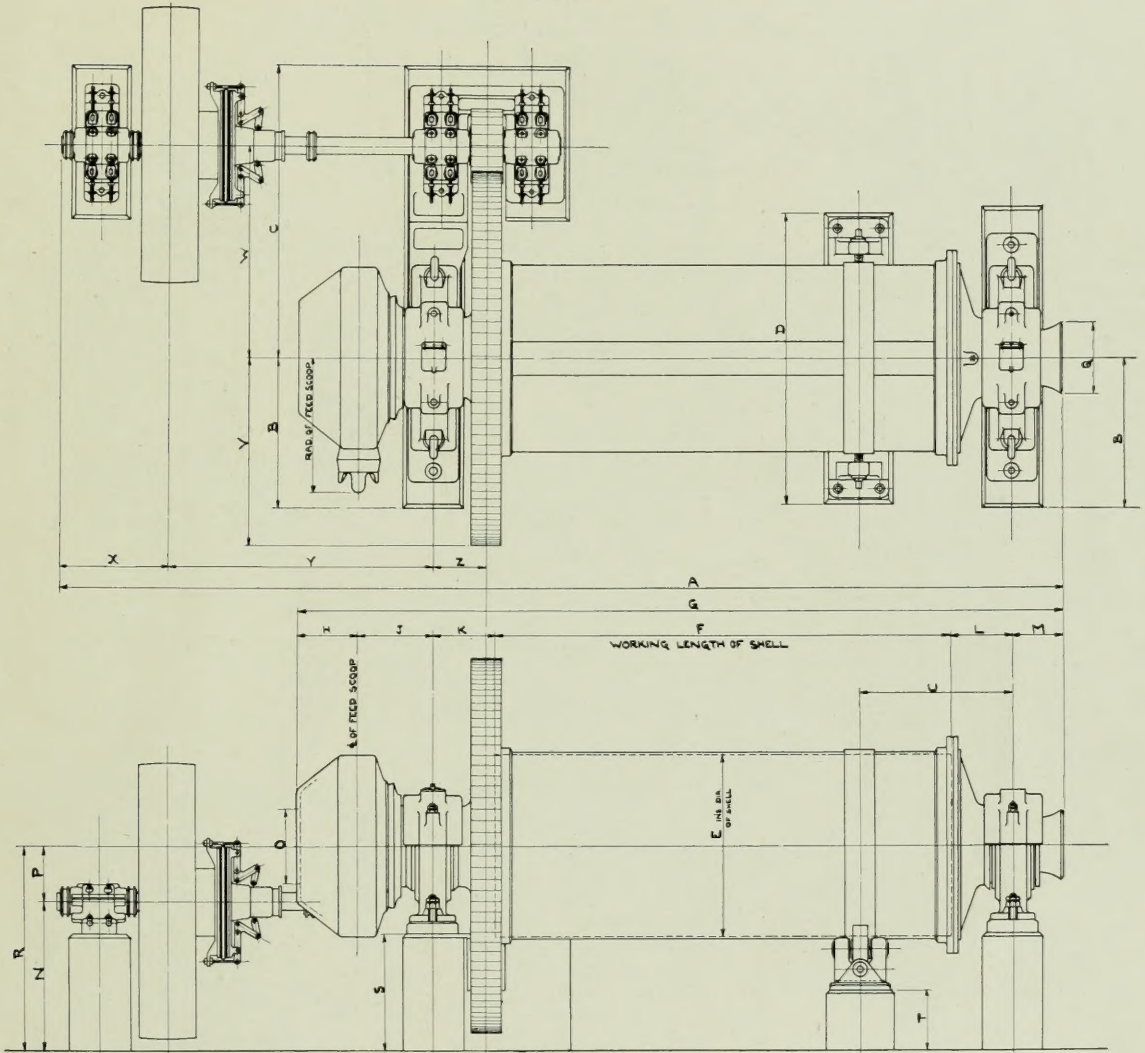
Clearance Sketch—Wet Grinding Rod Mills With Wuest Gear and Direct Motor Drive.

Cut 17482

SIZE		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	ZL	RAD OF FEED SCOOP
3'-0"	6'-1"																											
3'-0"	8'-1"																											
4'-0"	8'-1"	14'-10"	3'-3"	6'-4"	6'-4"	4'-0"	8'-1"	16'	20'	16'	16'	13 1/2'	4'-6"	20'	20'	3'-7"	11'	18 1/2'	2'-7"	15 3/4'	3'-4 1/2'	4'-1"	4'-3 1/2'	2'-3"	4'-10"	13 3/4'	2'-7"	4'-6"
4'-0"	10'-1"	16'-10"	3'-3"	6'-4"	6'-4"	4'-0"	10'-1"	16'	20'	16'	16'	13 1/2'	4'-6"	20'	20'	3'-7"	11'	18 1/2'	2'-7"	15 3/4'	3'-4 1/2'	4'-1"	4'-3 1/2'	2'-3"	4'-10"	13 3/4'	2'-7"	4'-6"
5'-0"	8'-1"	15'-8"	3'-7 1/2"	7'-4 1/2"	7'-3"	5'-0"	8'-1"	16'	20'	16 1/2"	18 1/2"	18'	5'-3"	19 3/4"	20'	3'-10 1/2"	16 1/2"	2'-1 1/2"	2'-10 1/2"	18'	3'-7"	4'-9 1/2"	4'-10 3/4"	2'-8 1/4"	5'-2 3/4"	15 1/2"	2'-8 3/4"	4'-6"
5'-0"	10'-1"	17'-8 1/2"	3'-7 1/2"	7'-4 1/2"	7'-3"	5'-0"	10'-1"	16'	20'	18 1/2"	18 1/2"	18'	5'-3"	19 3/4"	20'	3'-10 1/2"	16 1/2"	2'-1 1/2"	2'-10 1/2"	18'	3'-7"	4'-9 1/2"	4'-10 3/4"	2'-8 1/4"	5'-2 3/4"	15 1/2"	2'-8 3/4"	4'-6"
6'-0"	10'-1"	18'-1 1/2"	4'-0"	7'-11 1/2"	7'-10"	6'-0"	10'-1"	16'	20'	20'	20'	20'	6'-0"	2'-1 1/2"	20'	4'-6"	18'	2'-8"	3'-4"	2'-2"	3'-8"	5'-5"	5'-5 1/2"	2'-6 1/4"	6'-1 1/2"	17'	3'-4"	4'-6"
6'-0"	12'-1"	20'-1 1/2"	4'-0"	7'-11 1/2"	7'-10"	6'-0"	12'-1"	16'	20'	20'	20'	20'	6'-0"	2'-1 1/2"	20'	4'-6"	18'	2'-8"	3'-4"	2'-2"	3'-8"	5'-5"	5'-5 1/2"	2'-6 1/4"	6'-1 1/2"	17'	3'-4"	4'-6"

ROD MILLS

Cut 17479



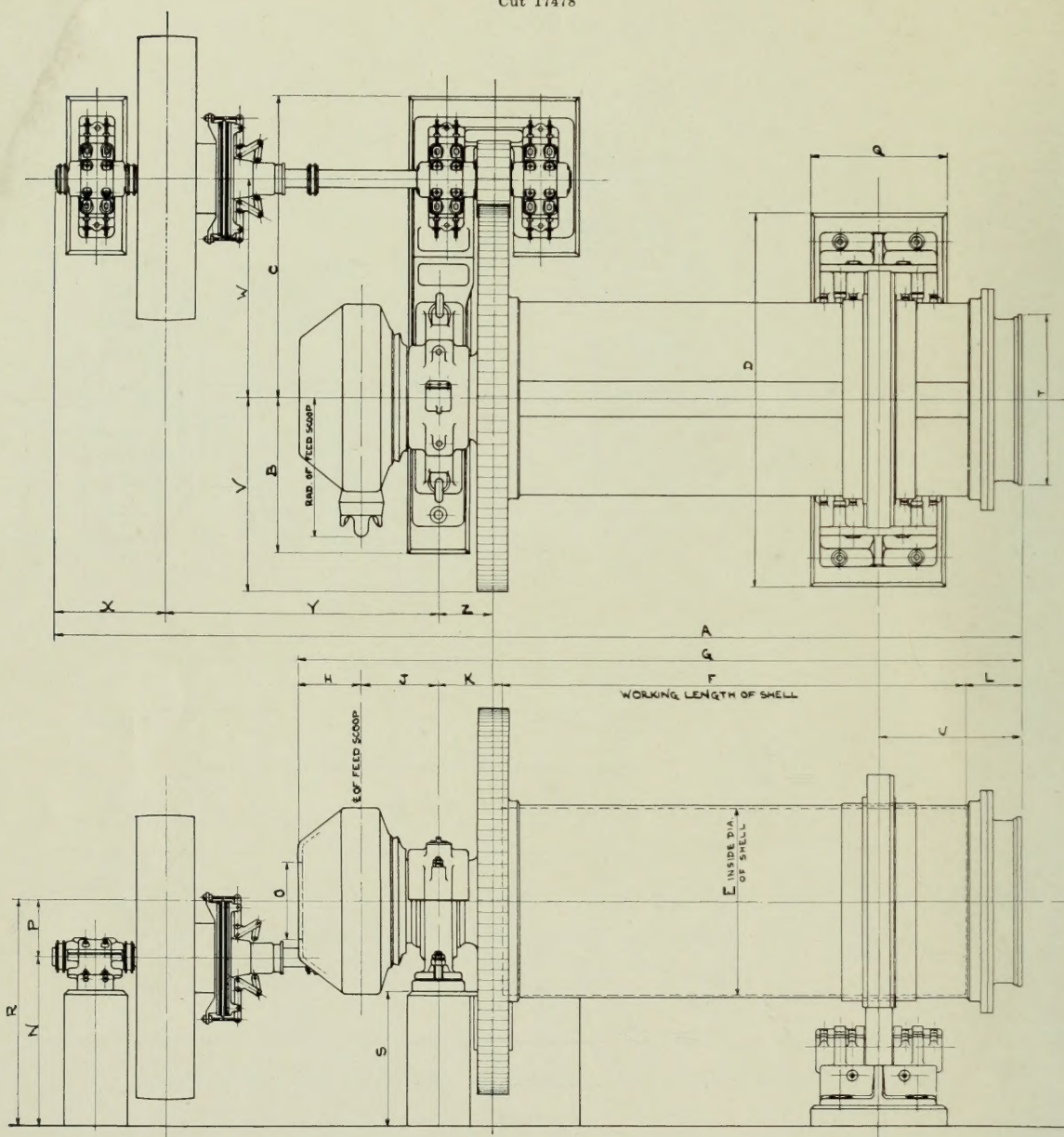
Clearance Sketch—Wet Grinding Rod Mills, Spur Gear and Pulley Drive.

Cut 17481

SIZE		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	RAD. OF FEED SCOOP
3'-0"	6'-1"	14 ¹¹ / ₈	2'-8"	5'-2 ¹ / ₄	6'-0"	3'-0"	6'-1"	11'-5 ¹ / ₄	13	15 ¹ / ₄	11 ¹ / ₂	11 ¹ / ₂	13	2'-6 ³ / ₄	16	11 ¹ / ₄	10 ¹ / ₄	3'-6"	22 ¹ / ₂	9	2'-0"	3'-2"	3'-7"	24 ³ / ₄	3'-9 ⁵ / ₈	9 ³ / ₈	35
3'-0"	8'-1"	16 ¹¹ / ₈	2'-8"	5'-2 ¹ / ₄	6'-0"	3'-0"	8'-1"	13'-5 ¹ / ₄	13	15 ¹ / ₄	11 ¹ / ₂	11 ¹ / ₂	13	2'-6 ³ / ₄	16	11 ¹ / ₄	10 ¹ / ₄	3'-6"	22 ¹ / ₂	9	3'-0"	3'-2"	3'-7"	24 ³ / ₄	3'-9 ⁵ / ₈	9 ³ / ₈	35
4'-0"	8'-1"	20 ¹ / ₈	3'-4"	6'-4 ¹ / ₂	6'-4"	4'-0"	8'-1"	14'-10 ¹ / ₂	16	20	16	16	13 ¹ / ₂	3'-3 ¹ / ₂	20	14 ¹ / ₂	18 ¹ / ₂	4'-6"	2'-7"	15 ³ / ₄	3'-4 ¹ / ₂	4'-1 ¹ / ₈	4'-7 ¹ / ₈	2'-5"	5'-10 ¹ / ₈	13 ⁷ / ₈	46
4'-0"	10'-1"	22 ¹ / ₈	3'-4"	6'-4 ¹ / ₂	6'-4"	4'-0"	10'-1"	16'-10 ¹ / ₂	16	20	16	16	13 ¹ / ₂	3'-3 ¹ / ₂	20	14 ¹ / ₂	18 ¹ / ₂	4'-6"	2'-7"	15 ³ / ₄	3'-4 ¹ / ₂	4'-1 ¹ / ₈	4'-7 ¹ / ₈	2'-5"	5'-10 ¹ / ₈	13 ⁷ / ₈	46
5'-0"	8'-1"	20 ¹ / ₈	3'-9"	7'-3 ¹ / ₂	7'-3"	5'-0"	8'-1"	15'-0 ¹ / ₂	16	20 ¹ / ₂	18 ¹ / ₂	18 ¹ / ₂	18	4'-1 ¹ / ₂	20	19 ¹ / ₂	2'-1 ¹ / ₈	5'-9"	3'-4 ¹ / ₂	24	3'-7"	4'-7 ⁵ / ₈	5'-0 ¹ / ₂	2'-8 ³ / ₄	5'-2"	15 ¹ / ₂	46
5'-0"	10'-1"	22 ¹ / ₈	3'-9"	7'-3 ¹ / ₂	7'-3"	5'-0"	10'-1"	17'-8 ¹ / ₂	16	20 ¹ / ₂	18 ¹ / ₂	18 ¹ / ₂	18	4'-1 ¹ / ₂	20	19 ¹ / ₂	2'-1 ¹ / ₈	5'-9"	3'-4 ¹ / ₂	24	3'-7"	4'-7 ⁵ / ₈	5'-0 ¹ / ₂	2'-8 ³ / ₄	5'-2"	15 ¹ / ₂	46
6'-0"	10'-1"	24'-2 ¹ / ₂	4'-0"	7'-3 ¹ / ₂	7'-10"	6'-0"	10'-1"	18'-1 ¹ / ₂	16	20 ¹ / ₂	20	20	20	4'-1 ¹ / ₂	20	22 ¹ / ₂	2'-8"	6'-0"	3'-4"	22	3'-8"	4'-7 ⁵ / ₈	4'-11 ¹ / ₈	3'-2"	5'-11 ¹ / ₂	17	46
6'-0"	12'-1"	26'-2 ¹ / ₂	4'-0"	7'-3 ¹ / ₂	7'-10"	6'-0"	12'-1"	20'-1 ¹ / ₂	16	20 ¹ / ₂	20	20	20	4'-1 ¹ / ₂	20	22 ¹ / ₂	2'-8"	6'-0"	3'-4"	22	3'-8"	4'-7 ⁵ / ₈	4'-11 ¹ / ₈	3'-2"	5'-11 ¹ / ₂	17	46

ALLIS-CHALMERS MANUFACTURING COMPANY

Cut 17478



Clearance Sketch—Dry Grinding Rod Mills, With Discharge Screen, Spur Gear Driven.

Cut 17483

SIZE		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	RAD OF FEED SCOOP
3'-0"	6'-1"																										
3'-0"	8'-1"																										
4'-0"	8'-1"	18'-8"	3'-4"	6'-4"	8'-0"	4'-0"	8'-1"	13'-5"	16"	20"	16"	12'-8"	4'-7"	3'-9"	20"	14'-2"	3'-6"	5'-0"	3'-1"	3'-8"	3'-6"	4'-1"	4'-7"	2'-5"	5'-10"	13'-8"	46"
4'-0"	10'-1"	20'-8"	3'-4"	6'-4"	8'-0"	4'-0"	10'-1"	15'-5"	16"	20"	16"	12'-8"	4'-7"	3'-9"	20"	14'-2"	3'-6"	5'-0"	3'-1"	3'-8"	3'-6"	4'-1"	4'-7"	2'-5"	5'-10"	13'-8"	46"
5'-0"	8'-1"	18'-8"	3'-9"	7'-3"	9'-6"	5'-0"	8'-1"	13'-8"	16"	20"	16"	12'-8"	5'-6"	4'-4"	20"	18'-2"	4'-0"	6'-0"	3'-7"	4'-8"	3'-0"	4'-7"	5'-0"	2'-8"	5'-2"	15'-2"	46"
5'-0"	10'-1"	20'-8"	3'-9"	7'-3"	9'-6"	5'-0"	10'-1"	15'-8"	16"	20"	16"	12'-8"	5'-6"	4'-4"	20"	19'-2"	4'-0"	6'-0"	3'-7"	4'-8"	3'-0"	4'-7"	5'-0"	2'-8"	5'-2"	15'-2"	46"
6'-0"	10'-1"	21'-8"	4'-0"	7'-3"	11'-0"	6'-0"	10'-1"	15'-9"	16"	20"	20"	12'-8"	6'-5"	5'-1"	20"	22'-2"	4'-6"	7'-0"	4'-4"	5'-7"	3'-0"	4'-7"	4'-11"	3'-2"	5'-11"	17"	46"
6'-0"	12'-1"	23'-10"	4'-0"	7'-3"	11'-0"	6'-0"	12'-1"	17'-9"	16"	20"	20"	12'-8"	6'-5"	5'-1"	20"	22'-2"	4'-6"	7'-0"	4'-4"	5'-7"	4'-0"	4'-7"	4'-11"	3'-2"	5'-11"	17"	46"

Allis-Chalmers Manufacturing Company

PRINCIPAL PRODUCTS

AIR BRAKES

AIR COMPRESSORS

Steam Driven
Belt Driven
Electrically Driven, Portable
Electrically Driven, Stationary
Hydraulic Driven

CEMENT MACHINERY

Agitators
Air Slurry Pumps
Balls, forged steel
Ballpeb Mills
Compeb Mills
Concave
Conveyors
Crushing Rolls
Dust Collectors
Elevators
Fairmount Crushers
Feeders
Gyratory Crushers
Jaw Crushers
Perforated Metals
Preliminators
Pulverized Coal Plants
Rotary Kilns and Auxiliary Equipment
Rotary Coolers
Rotary Dryers
Revolving Screens
Tube Mills
Wash Mills
Complete Cement Plants

CONDENSERS

Barometric
Jet
Surface

CRUSHING MACHINERY

Agricultural Plants
Bin Gates
Conical Screens
Conveyors
Crushing Rolls
Dust Collectors
Elevators
Fairmount Crushers
Feeders
Grizzlies
Gyratory Crushers
Hoists
Jaw Crushers
Perforated Metals
Portable Crushers
Pulverizers
Revolving Screens
Shaking Screens
Stone and Sand Scrubbers
Stone and Sand Washers
Trolleys
Complete Fine Grinding Plants
Complete Crushing Plants

ENGINES

Corliss Engines
Gas Engines
Diesel Oil Engines
Blowing Engines
Rolling Mill Engines

FLANGED AND PRESSED PLATE WORK

FORGINGS

Alternating Current
Steam Turbo Generators
Water Wheel Type Generators
Engine Type Generators
Belted Type Generators
Frequency Changers
Synchronous Motor Generator Sets
Induction Motor Generator Sets
Synchronous Motors
Synchronous Condensers
Single Phase Induction Motors
Polyphase Induction Motors
Power Transformers
Distribution Transformers
Auto-Transformers
Motor Starters
Motor Driven Air Compressors
Switchboards

FLOUR MILL MACHINERY

Aspirators
Bolters, Universal
Bolting Cloth
Bolting Cloth Cleaners
Bran and Shorts, Dusters
Bran Packers
Conveyors, Spiral
Corn Mills
Fans
Feed Mills
Feed Screens
Flour Dressers
Flaking Machines
Flour Feeders and Mixers
Flour and Bran Packers
Granulators
Purifiers
Reels
Rolls
Roller Mills
Rolling Screens
Scalpers

HOISTING EQUIPMENT

Hoists, Electric
Hoists, Steam
Cages, Hoisting
Skips, Hoisting
Sheaves, Hoisting

HYDRAULIC MACHINERY

Francis Turbines
Impulse Wheels
Oil Pressure Governors
Pressure Regulators
Butterfly Valves
Accessories

MINING AND METALLURGICAL MACHINERY

Concentrating Plant Equipment
Copper Converting Plant Equipment
Cyanide Plant Equipment
Ore Washing Plant Equipment
Refining Plant Equipment
Roasting Plant Equipment
Sampling Plant Equipment
Smelting Plant Equipment
Stamp Mill Equipment
Breakers, McGregor Skull
Cars, Mould and Slag
Classifiers, Ore, Pulp and Sand
Converters, Copper
Crushers, Blake and Dodge Jaw
Elevators, Vertical Mill
Feeders, Ore and Rock
Furnaces, Copper and Lead Smelting
Furnaces, Roasting
Gates, Bin
Granulators, Ball and Pebble
Grinders, Ore and Sample
Grizzlies, Stationary and Moving
Jigs, Hancock and Hartz
Machines, Copper and Lead Casting
Machines, Flotation
Mills, Rod
Moulds, Bullion, Copper and Lead
Pots, Slag
Retorts, Gold and Silver
Rolls, Ore and Rock Crushing
Samplers, Ore and Tailings
Stamps, Gravity
Stamps, Tremain Steam
Trommels or Screens, (Revolving)
Vanners, Frue and Isbell
Washers, Log

ELECTRICAL APPARATUS

Direct Current
Steam Turbo Generators
Water Wheel Type Generators
Engine Type Generators
Belted Type Generators
Three Wire Generators
Railway Generators
Electrolytic Generators
Rotary Converters
Gasoline Engine Generator Sets
Constant Speed Motors
Adjustable Speed Motors
Balancer Sets
Motor Generator Sets
Motor Driven Air Compressors
Switchboards

PERFORATED METALS

POWDERED COAL PLANTS

POWER TRANSMISSION MACHINERY

Belt Tighteners
Boxes
Couplings
Gears
Hangers
Pulleys
Rope Sheaves
Shafting

PUMPING MACHINERY

Centrifugal Pumps
Fire Service Pumps
Geared Pumps
High Duty Reciprocating Pumping Engines
Motor Driven Plunger Pumps
Motor Driven Mine Pumps
Hydraulic Pressure Pumps
Oil Line Pumps
Screw Pumps

SAW MILL MACHINERY

Band Mills, Double Cutting
Band Mills, Single Cutting
Band Mills, Telescopic
Band Re-saws, Horizontal
Band Re-saws, Vertical
Board Lifters, Steam
Cant Flippers, Steam
Canting Machine, Overhead
Carriages
Circular Saw Mills
Conveying Machinery
Cutting Off Saws, Steam Feed
Edgers
Edging Grinders
Feeds, Steam, Direct Acting
Feeds, Steam, Twin Engine
Filling Room Tools
Lath Mills and Bolters
Live Rolls and Drives
Log Chains
Log Jacks
Log Loaders
Log Turners
Niggers, Steam
Set Works
Slashers
Steam Feed Valves
Stock Lifters, Steam
Transfers
Trimmers

TIMBER TREATING AND PRESERVING MACHINERY

TRACTORS

TURBINES—STEAM

TURBINES—WATER

Special Applications
Steel Mill Motors
Adjustable Speed Rolling Mill Drives
Blooming and Reversing Mill Drives
Hoist Motors
Illgner Flywheel Motor Generator Sets
Cement Mill Drives
Centrifugal Pump Motors
Reciprocating Plunger Pump Drives
Sectionalized Paper Mill Drives
Rubber Mill Drives
Flour Mill Drives
Fly Wheel Equalizing Sets
Machine Tool Drives
Ship Propulsion Drives
Air Brake Equipments

Allis-Chalmers Manufacturing Company

General Offices, Milwaukee, Wis.

DISTRICT OFFICES

Atlanta, Ga., 1104-1106 Healey Bldg.
Baltimore, Md., 17 & 19 N. Guilford Ave.
Birmingham, Ala., 1010-1012 Brown-Marx Bldg.
Boston, Mass., 723-724 State Mutual Bldg.
Buffalo, N. Y., 574-576 Ellicott Square Bldg.
Charlotte, N. C., 215 Latonia Bldg.
Chicago, Ill., 1321 Peoples Gas Bldg.
Cincinnati, O., 1720 First National Bank Bldg.
Cleveland, O., 1119-1121 Schofield Bldg.
Dallas, Texas, 1101-1103 Patterson Ave.
Denver, Colo., Symes Bldg.
Detroit, Mich., 1828-1829 Ford Bldg.
Duluth, Minn., 709 Alworth Bldg.
Indianapolis, Ind., 305 Merchants Bank Bldg.
Kansas City, Mo., 1410-1412 Waldheim Bldg.

Los Angeles, Cal., 623-625 Title Insurance Bldg.
Milwaukee, Wis., West Allis Works.
Minneapolis, Minn., 707-711 Metropolitan Life Bldg.
New Orleans, La., 719-723 Maison Blanche Bldg.
New York, N. Y., 50 Church Street.
Philadelphia, Pa., 813-816 Franklin Trust Bldg.
Pittsburgh, Pa., 1267 Park Bldg.
Portland, Ore., 601 Commercial Bldg.
St. Louis, Mo., 218 Exchange Bldg.
Salt Lake City, Utah, 20 Kearns Bldg.
San Francisco, Cal., 741-751 Rialto Bldg.
Seattle, Wash., 115 Jackson Street.
Toledo, O., 819 Ohio Bldg.
Wilkes-Barre, Pa., 904 Coal Exchange Bldg.

FARM TRACTOR DISTRICT OFFICES

Allis-Chalmers Mfg. Co., 1101-1103 Patterson Ave., Dallas, Texas.

FOREIGN DISTRICT OFFICES

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Paris, France, 3 Rue Taitbout.
Santiago, Chile, Edificio Ariztia, Casilla 2653
Oruro, Bolivia

CANADIAN REPRESENTATIVES

Canadian Allis-Chalmers, Limited:
Toronto, Ontario

FOREIGN SALES AGENCIES

Shanghai, China	American Trading Company, 25 Broad St., New York
Hankow, China	American Trading Company, 25 Broad St., New York
Pekin, China	American Trading Company, 25 Broad St., New York
Tientsin, China	American Trading Company, 25 Broad St., New York
Tokyo, Japan	American Trading Company, 25 Broad St., New York
Kobe, Japan	American Trading Company, 25 Broad St., New York
Yokohama, Japan	American Trading Company, 25 Broad St., New York
Sao Paulo, Brazil	Assumpcao & Cia
Johannesburg, South Africa	Edward L. Bateman
Mexico City, Mexico	H. W. Beers Electric Co., S. A.
Mexico City, Mexico	R. E. Briggs Co., S. A.
Madrid, Spain	Gumersindo Garcia
Christchurch, New Zealand,	A. R. Harris Co., Ltd.
Honolulu, Hawaii	Honolulu Iron Works
Manila, P. I.	Earnshaws Docks & Honolulu Iron Works
Antofagasta, Chile	Suc. J. K. Robinson, 140 Front St., New York, N. Y.
Iquique, Chile	Suc. J. K. Robinson, 140 Front St., New York, N. Y.
Havana, Cuba	Thrall Electric Company

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